Patent claims

1. Method for vapor deposition of a substrate with a layer of a spicular x-ray luminophore with at least one alkali metal, in which alkali halogenide phases are simultaneously vaporized with an alkali halogenide, mixed in the vaporization phase and vacuum-deposited on the substrate.

2. Method according to claim 1, characterized in that the vapor deposition is implemented at temperatures between 50°C and 300°C and a pressure between 0.001 Pa and 3 Pa.

3. Method according to claim 1 or 2, characterized in that a temperature treatment of the luminophore layer is implemented after the vapor deposition and a cooling.

4. Method according to claim 3, characterized in that the temperature treatment after cooling preferably ensues at room temperature in the presence of water vapor.

5. Method according to claim 3 or 4, characterized in that the temperature treatment ensues in the range from 100°C to 300°C.

6. Method according to any of the claims 3 through 5, characterized in that the temperature treatment ensues in a mixture of inert gas and water vapor.

7. Method according to any of the claims 3 through 5, characterized in that the temperature treatment ensues in humid air.

8. Method according to any of the claims 1 through 7, characterized in that $Cs_xEu_yBr_{(x+2y)}$ is used as an alkali halogenide phase and CsBr is used as an alkali

halogenide, such that an x-ray storage luminophore of the general formula CsBr : $Cs_xEu_yBr_{(x+2y)}$ forms.

9. Method according to any of the claims 1 through 8, characterized in that a quantity x of the alkali halogenide phase and a quantity (600g –x) of the alkali halogenide are mutually vaporized.

10. Method according to any of the claims 1 through 9, characterized in that the alkali halogenide phase and the alkali halogenide are mixed and introduced into a vaporization boat.

11. Method according to any of the claims 1 through 9, characterized in that the alkali halogenide phase and the alkali halogenide are separately introduced into a plurality of vaporization boats.

12. Spicular x-ray luminophore with at least one alkali metal, produced according to the method according to any of the claims 1 through 11 according to the following formula:

$$\left(\left(M'^{+}\,H'^{-}\right)_a\left(M''^{+}\,H''^{-}\right)_{(1-a)}\right)_k : \left(M'^{+}{}_x S^{z+}{}_y H'^{-}{}_x H'''^{-}{}_{z*y}\right)_b \left(M''^{+}{}_x S^{z+}{}_y H''^{-}{}_x H'''^{-}{}_{z*y}\right)_c \left(M'^{+}{}_x S^{z+}{}_y H''^{-}{}_x H'''^{-}{}_{z*y}\right)_d \left(M''^{+}{}_x S^{z+}{}_y H'^{-}{}_x H'''^{-}{}_{z*y}\right)_e$$

whereby M^+ is at least one metal ion from the group Na, K, Rb and Cs, H^- is at least one halogenide from the group F, Cl, Br and I and S^{z+} is at least one lanthanide ion from the group La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb or Lu.

13. X-ray luminophore according to claim 12, characterized in that it is an x-ray storage luminophore according to the following formula:

$$CsBr : Cs_xEu_yBr_{(x+2y)}$$